STANDARDIZING INSPECTION AND ACCEPTANCE THROUGH PARTNERING AND SPI

LTC Stephen D. Kreider, LTC Charles Basham, and MAJ Darryl Colvin

Introduction

The Army's overarching goal for acquisition reform is to reduce cost, remove barriers, and promote business efficiencies between the government and industry. The Single Process Initiative (SPI), introduced by Secretary of Defense William J. Perry on Dec. 8, 1995, is the mechanism for implementing changes to existing contracts to bring about these goals.

In 1999, the Program Management Office for the Multiple Launch Rocket System (PMO, MLRS) and the Program Management Office for the Bradley Fighting Vehicle Systems (PMO, BFVS) partnered with United Defense Limited Partnership (UDLP), Lockheed Martin Missiles and Fire Control–Dallas (LMMFC-D), Defense Distribution Depot Red River (DDRT), Red River Army Depot (RRAD), and the then Defense Contracting Management Command (DCMC-York and -Camden) to develop an SPI to standardize the inspection and acceptance procedures for the M993/A1 carrier and the M270/A1 launcher. The standardized inspection and acceptance procedures were designed to eliminate multiple inspection and acceptance processes; establish advanced world-class practices while reducing the need for oversight; and achieve cost, schedule, and performance benefits for the government and the contractor. The M270/A1 Talkman inspection and acceptance system, designed by UDLP, will achieve these goals by providing a single, accurate, and consistent process for inspection and acceptance and by providing real-time deficiency reporting to contractors and the government. (Talkman is a registered trademark of Vocollect Verbal Computing Systems.)

Why SPI?

SPI allows (not requires) contractors to establish a single process within their facilities to increase efficiency, reduce contractor and product costs, and improve product quality. Use of single processes will help the contractor meet the needs of multiple government customers, thus eliminating duplicative contractor systems and processes.

Talkman System Background

Talkman is a portable electronic data collection device worn on the belt. With a rechargeable battery pack, it weighs approximately 3 pounds. Unlike any other data collection device, Talkman uses a combination of text-to-speech voice synthesis and voice-recognition technology. In other words, Talkman actually talks to the inspector and responds to the inspector's verbal commands.

In 1992, UDLP introduced Talkman into the weld inspection area where the BFV was built. Instructions were developed to guide the inspector through a consistent predetermined inspection sequence ensuring a complete and thorough examination of the hull weld. Talkman instructs the inspector where to go and what to look at, and asks questions to determine the suitability of the equipment. If the inspector is uncertain, he or she can ask Talkman for help, criteria, or drawing information and receive a spoken message that provides the information instantly. Any reported defects are automatically documented by Talkman and downloaded to a database for tracking corrective action and defect trend analysis.

In 1995, PMO, BFVS asked UDLP to develop a Talkman inspection program for the BFV A2 deprocessing operations at Fort Stewart, GA. As a result of this request, Talkman saved inspectors between 2 and 4 hours of documentation and inspection criteria research time per vehicle.

MLRS Initiative

In 1998, impressed with the work done for the PMO, BFVS, the PMO, MLRS awarded a contract to UDLP to develop the MLRS Talkman inspection and acceptance system. The system was to go beyond just UDLP carrier inspection to establish real-time reporting through the LMMFC-D network, and to be used by inspectors at DDRT, RRAD, LMMFC (Camden, AR), and UDLP (York, PA) to examine a complete M270/A1 system. Common inspection criteria would be used for all aspects of production, fielding, foreign military sales (FMS), and depot support.

Partnering was used to generate the common inspection and acceptance criteria. A process action team (PAT) was formed with quality assurance, engineering, logistics, fielding, and contract representatives from PMO, MLRS; PMO, BFVS; RRAD; DDRT; DCMC-York and -Camden; LMMFC; and UDLP. The team's goal was to decrease unexpected government and contractor costs by developing and implementing a process to address launcher inspection and acceptance, deficiency reporting, and issue resolution.

The PAT reviewed the carrier and launcher final inspection records, the launcher advanced test procedures, and the launcher fielding checklists and quickly learned that not only were there 11 different inspection and acceptance documents, the inspection and acceptance criteria were not the same. Information on recurring and nonrecurring deficiencies was not getting back to the depot and contractor production lines for root-cause analysis and corrective action. In less than a year, the PAT established standardized inspection and acceptance criteria from production through fielding. The PAT accomplished this by doing the following:

- Developing a Talkman system for M270/A1 inspection, acceptance, and deficiency reporting, thereby condensing the 11 different inspection and acceptance documents into 1 common inspection criterion;
- Developing a database to capture deficiency reporting from each inspection and acceptance point;

• Reviewing, updating, and approving the standardized aluminum welding specification for implementation at UDLP and RRAD;

• Reviewing, updating, and approving the depot maintenance work requirements for the M993 carrier; and

• Re-establishing the M993 baseline for all organizations involved with carrier remanufacturing (from induction through fielding).

Overall Benefits

The M270/A1 Talkman system improves quality and provides significant cost savings (i.e., time, dollars, and manpower requirements) by doing the following:

• *Reducing Variability In Inspection*. Each inspection is performed exactly the same way regardless of the operator. The process is consistent, efficient, thorough, and repeatable. Consistent data collection also provides better overall analysis capability across multiple locations and organizations.

• *Reducing Documentation Time*. Inspection data are collected while the task is performed rather than after it is completed. The data are downloaded to provide computer-generated reporting and automated quality trend analysis. Prior to fielding the MLRS Talkman system, DDRT averaged 100 hours preparing for each quarterly MLRS production review because of lengthy checklists, defect sheets, and other handwritten documentation. The same process took them less than 1 hour to prepare for the most recent MLRS production review using the MLRS Talkman system and database.

• *Reducing Training Time*. With minimal training, an operator can independently begin performing lengthy, detailed tasks by just following step by step verbal instructions from Talkman.

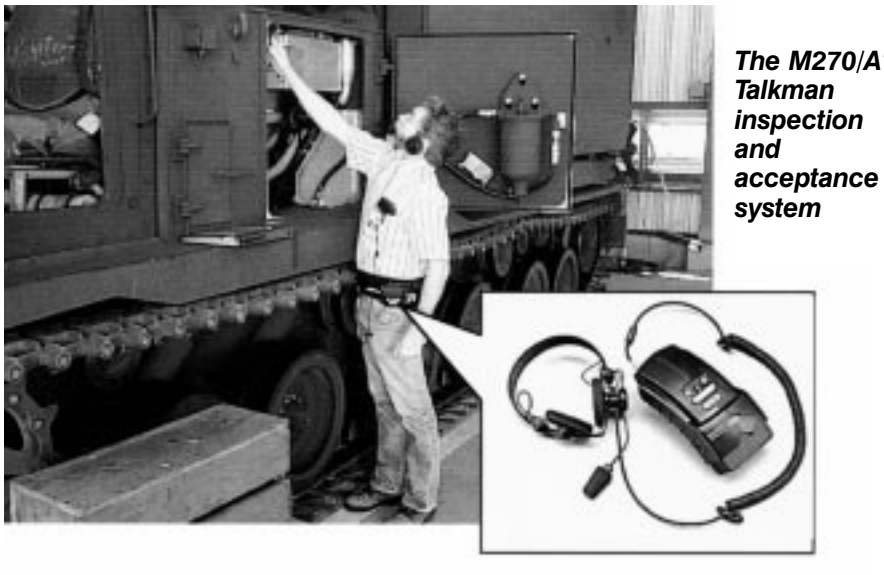
• *Reducing Research Time*. The operator can verbally request and retrieve itemized inspection criteria. This often eliminates the need to perform lengthy research of technical manuals and drawing requirements.

• *Increasing Efficiency*. Talkman is a hands-free data collector. The human voice is the fastest, most accurate means of data collection, and is easily the most practical and versatile.

• *Reducing Oversight*. Government or contractor quality assurance specialists can quickly scan the printed report of inspection results, thereby eliminating the need for redundant inspections.

The Talkman inspection database developed by UDLP has automated defect trend analysis capabilities. The database identifies the most frequently occurring items found deficient by inspection. Manpower necessary to perform root-cause investigations and corrective-action initiatives concentrates on those areas that will have the greatest impact on reducing deficiencies overall. For example, out of 24 launchers inspected, 5 had deficiencies relative to the records and forms required as part of the preparation for delivery, and 5 had problems with the initial elevation resolver readout tests. Each of these deficiencies had a 20.8 percent occurrence rate, or one out of every five units. Correcting the cause of these two deficiencies alone would significantly reduce the average defects per unit and eliminate predictable recurring deficiencies.

Other automated reports provide running averages on the number of overall defects per vehicle or launcher. These reports identify which units were affected by certain defect types. The running average reports provide management with a quick reference on the effectiveness of the corrective action systems and initiatives in place. Reports identifying which vehicles or launchers had specific problems provide traceability and detailed problem descriptions. Anyone can produce accurate professional quality reports in just a few seconds using a point-and-click medium.



The M270/A1 Talkman inspection and acceptance system

Other Uses

The M270/A1 Talkman system can be programmed for deprocessing any configuration of the M270. This is extremely important for the different FMS configurations. Redundant documentation requirements will be eliminated. Once the collected information is loaded into a database, it can be directed to appear on as many different forms as required by each respective government agency or contractor.

Summary

The MLRS teaming effort between contractors and government agencies to provide a standardized inspection and acceptance process under the SPI has been a resounding success. The MLRS M270/A1 Talkman system clearly met the intent of SPI to eliminate multiple inspection and acceptance processes; achieve cost, schedule, and performance benefits; and establish advanced world-class practices.

LTC STEPHEN D. KREIDER is a student at the Industrial College of the Armed Forces. He was the Product Manager for the MLRS Improved Launcher Mechanical System at the time this article was written.

LTC CHARLES BASHAM is the Combat Service Support Division Chief, Combat Support Evaluation Directorate, Army Evaluation Center. He was the Assistant Product Manager for MLRS Advanced Development prior to writing this article.

MAJ DARRYL COLVIN is the Department of the Army Systems Coordinator for the Army Tactical Missile System-BAT Project Office. He was the Assistant Product Manager for the M993 MLRS carrier prior to writing this article.
